

VIBRATION SWITCH-VSW-150

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User Manual

VIBRATION SWITCH VSW-150



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Note:

Information in this manual is subject to change without prior notice or permission.

1. INTRODUCTION

1.1 Purpose of the manual

- This manual should be provided to the end user. Keep an extra copy or copies of the manual in a safe place.
- Read this manual carefully to gain a thorough understanding of how to operate this product before starting operation.
- This manual describes the functions of this product. Masibus does not guarantee the application of these functions for any particular purpose.

1.2 Vibration switch Overview

For certain unattended or critical application, monitoring program will not identify any transient faults that happens in between monitoring cycle. Continuous monitoring may be needed to identify these transient faults to ensure corrective action to be developed and implemented at a schedule time, rather than having to disrupt operations for a failure.

VIBRATION SWITCH Model **VSW-150** is an on-line monitoring instrument for vibration. It accepts the vibration signal from an accelerometer display it and also generate 4-20Ma retransmission output.

There is a Relay output in the vibration switch. Relay can be set to NO or NC (Factory Settable, Default – NO). Hysteresis is fix 1.0 mm/s. Set point is settable through the range via trim pot inside the instruments. Time delay for relay on operation is settable via trim pot from 8 sec to 55 sec to avoid false tripping.

The output 4-20 Ma can be interfaced with PLC or DCS system, which in turn can continuously monitor the condition of machine. This allows for alarming and trending of the machine condition. Some systems can even be programmed to shutdown the equipment either manually or by PLC or DCS).

1.3 Product ordering code

Model No.	Vibration Range		Analog Output		Mounting	
VSW 150	XX		X		X	
	1R	12.5mm/s	N	None	N	None
	2R	25 mm/s	N	None	S	Stud
	3R	50 mm/s	1	4 to 20 mA	P	Pad

2. SAFETY AND WARNING PRECAUTIONS

2.1. Safety Precautions

Dangerous voltages capable of causing death are sometimes present in this instrument. Before installation or beginning of any troubleshooting procedures the power to all equipment must be switched off and isolated. Units suspected of being faulty must be disconnected and removed first and brought to a properly equipped workshop for testing and repair. Component replacement and interval adjustments must be made by a company person only.

2.2 Warning Precautions

- Before wiring, verify the label for correct model no. and options.
- Wiring must be carried out by personnel, who have basic electrical knowledge and practical experience.
- It is recommended that power of these units to be protected by fuses, circuit breakers or external over current rated at the minimum value possible.
- All wiring must confirm to appropriate standards of good practice and local codes and regulations. Wiring must be suitable for voltage, current, and temperature rating of the system.
- Beware not to over-tighten the terminal screws.
- Unused control terminals should not be used as jumper points as they may be internally connected, causing damage to the unit.
- Verify that the ratings of the output devices and the inputs as specified in Chapter 7 are not exceeded.
- Do not use this instrument in areas such as excessive shock, vibration, dirt, moisture, corrosive gases or rain. The ambient temperature of the areas should not exceed the maximum rating specified.

→ Provide Power from a single-phase instrument power supply. If there is a lot of noise in the power line, insert an insulating transformer into the primary side of the line and use a line filter on the secondary side. As counter measures against noise, do not place the primary and secondary power cables close to each other.

Note:

UNPACKING : Upon receipt of the shipment remove the unit from the carton and inspect the unit for shipping damage. If any damage due to transit, report and claim with the carrier. Write down the model number, serial number, and date code for future reference, when communicating with our *Customer Support Division*.

3 MOUNTING DETAILS

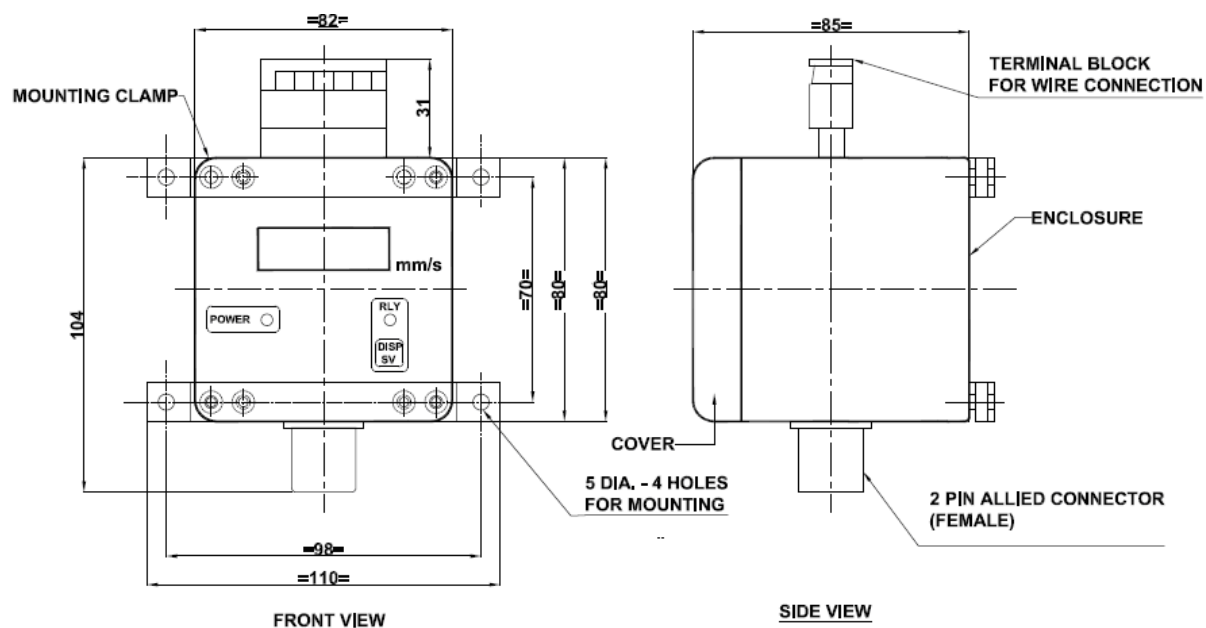


Figure 1: Mounting Detail

ENCLOSURE DIMENSION: 80X82X85 mm

4 TERMINAL CONNECTIONS (ELECTRICAL CONNECTION GUIDELINES)

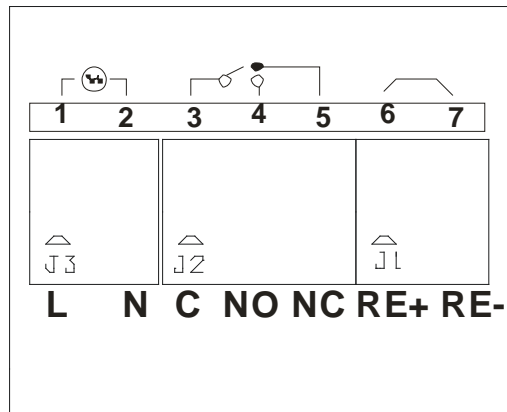


Figure 2: Terminal connection

Terminal Reference	Pin	Description
L		LIVE for AC Supply
N		NEUTRAL for AC Supply
C		COMMON Contact of Relay Output
NO		NORMALLY OPEN Contact of Relay Output
NC		NORMALLY CLOSE Contact of Relay Output
RE+		POSITIVE Terminal of Retransmission Output
RE-		NEGATIVE Terminal of Retransmission Output

5 **OPERATION DETAILS:**

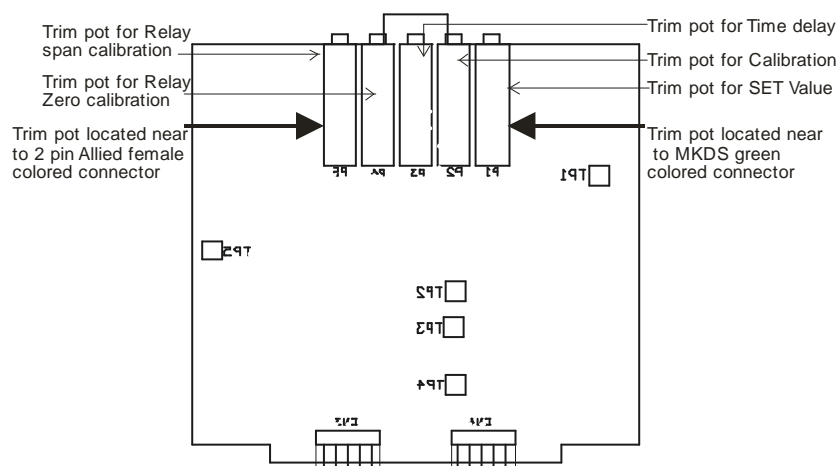
Vibration switch VSW 150 is so easy to use. To operate it properly some function at user end required to perform. Those functions are listed below.

- All connection are given outside of module for power ,relay output and analog output through green detachable connector, so connect as per the connection detail given in terminal connection.
- **Function of different trim pots.**

Open the top cover of module by unscrewing the top screws. Saw the Pots like this for change the SET value.

For change the SET point follow the procedure described below.

NOTE: Do not trim the other trim pot otherwise system calibration is disturbed.



- **Procedure for change the Set point.**
 - Give the supply to the unit and to fix the set point as per requirement open the cover of supplied unit, unscrewing the four screw of the top.
 - Now display card is visible to the user. There are five trim pot on left side and two on the right side.
 - To fix the set point trim the trim pot SP(at the top of left side pots)by keeping black switch pressed(given at display card).
 - At last fit the cover properly by fitting the screws.
- **Procedure for change the Time delay.**

- P3 pot is use for to change the time delay from 8 sec to 55 sec.
- When trim pot P3 is rotated in clockwise direction the time delay is decrease and rotated in anticlockwise direction time delay is increase.

6 Reference value of signal I/P Vs Display value.

Table: 50mm/s Vs Signal level

Amplitude (mVrms)	Frequency (Hz)								
	10	20	50	100	200	400	500	800	1000
12.8	20.00	10.00	4.00	2.00	1.00	0.50	0.40	0.25	0.20
16	25.00	12.50	5.00	2.50	1.25	0.63	0.50	0.31	0.25
25.6	40.00	20.00	8.00	4.00	2.00	1.00	0.80	0.50	0.40
32	50.00	25.00	10.00	5.00	2.50	1.25	1.00	0.63	0.50
48		37.50	15.00	7.50	3.75	1.88	1.50	0.94	0.75
64		50.00	20.00	10.00	5.00	2.50	2.00	1.25	1.00
96			30.00	15.00	7.50	3.75	3.00	1.88	1.50
128			40.00	20.00	10.00	5.00	4.00	2.50	2.00
160			50.00	25.00	12.50	6.25	5.00	3.13	2.50
192				30.00	15.00	7.50	6.00	3.75	3.00
256				40.00	20.00	10.00	8.00	5.00	4.00
320				50.00	25.00	12.50	10.00	6.25	5.00
384					30.00	15.00	12.00	7.50	6.00
480					37.50	18.75	15.00	9.38	7.50
512					40.00	20.00	16.00	10.00	8.00
640					50.00	25.00	20.00	12.50	10.00
768						30.00	24.00	15.00	12.00
960						37.50	30.00	18.75	15.00
1024						40.00	32.00	20.00	16.00
1280						50.00	40.00	25.00	20.00
1600							50.00	31.25	25.00

Table: 4 to 20 Ma Vs signal of 50mm/s

Amplitude (mVrms)	Frequency (Hz)								
	10	20	50	100	200	400	500	800	1000
12.8	10.4	7.2	5.28	4.64	4.32	4.16	4.128	4.08	4.064
16	12	8	5.6	4.8	4.4	4.2	4.16	4.1	4.08
25.6	16.8	10.4	6.56	5.28	4.64	4.32	4.256	4.16	4.128
32	20	12	7.2	5.6	4.8	4.4	4.32	4.2	4.16
48		16	8.8	6.4	5.2	4.6	4.48	4.3	4.24
64		20	10.4	7.2	5.6	4.8	4.64	4.4	4.32
96			13.6	8.8	6.4	5.2	4.96	4.6	4.48
128			16.8	10.4	7.2	5.6	5.28	4.8	4.64
160			20	12	8	6	5.6	5	4.8
192				13.6	8.8	6.4	5.92	5.2	4.96
256				16.8	10.4	7.2	6.56	5.6	5.28
320				20	12	8	7.2	6	5.6
384					13.6	8.8	7.84	6.4	5.92
480					16	10	8.8	7	6.4

512					16.8	10.4	9.12	7.2	6.56
640					20	12	10.4	8	7.2
768						13.6	11.68	8.8	7.84
960						16	13.6	10	8.8
1024						16.8	14.24	10.4	9.12
1280						20	16.8	12	10.4
1600							20	14	12

7 SPECIFICATIONS

7.1 ELECTRICAL SPECIFICATION

- **Supply Voltage** : 90 to 270VAC
- **Sensor Excitation**: 3.87 mA current, 21 Voltage
- **Cut-Off frequency**: High – 1 KHz,
Low – 10Hz
- **RMS velocity**: 12.5 mm/s , 25 mm/S or 50mm/S FSD (Factory set)
- **Retransmission Output**: 4 to 20mA load 550ohm.

7.2 ACCURACY

- **Input to retransmission output**: $\pm 5\%$ of full span
- **Input to seven segment display**: $\pm 5\%$ of full span

7.3 MECHANICAL SPECIFICATION

- **Enclosure** : ABS
- **Weight**: 350Grams Approx
- **Enclosure Dimension** : 80X82X85 mm wall mounted enclosure
- **Mounting**: Vertical mounting.

7.4 ENVIRONMENTAL SPECIFICATION

- **Ambient Temperature**:
0 to 55 °C
- **Humidity**:
30 to 95% RH non-condensing
- **Storage Temperature**:
0-80 °C

7.5 OUTPUTS

- 1) Relay Output: 230VAC, 2 A
Relay can be set to NO or NC (Factory Settable, Default - NO)
Hysteresis: 1.0 mm/s.
Time Delay for relay on operation: Time Delay is settable via center trim pot from 8 sec to 55 sec.
- 2) Retransmission output: 4 – 20mA

Note:

Sensor open condition: When sensor is **open** or not connected with unit at that time unit will show " 1 . " message on display and retransmission output is also less than 1mA.

7.6 CALIBRATION

- Zero and Span calibration for 4-20 mA output via trim port inside instrument.
- Instrument Warm-up Time < 30 Min.

Note: Instrument is factory calibrated. So, it does not require re-calibration. If user wants to re-calibration then it should be done only by trained technical persons only.

8 MAINTANCE



Before installation or beginning of any troubleshooting procedures the power to all equipment must be switched off and isolated. Units suspected of being faulty must be disconnected and removed first and brought to a properly equipped workshop for testing and repair. Component replacement and interval adjustments must be made by a company person only.

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